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THE LITERATURE OF EDESTUS.

C. R. EASTMAN.

It has happened not infrequently that discoveries of the most surprising nature in paleontology have been made almost simultaneously in different parts of the world. Hardly has some form of animal life, previously unheard of and apparently unique, been brought to light, when identical or closely related types are reported from remote regions. Familiar coincidences of this nature are recalled by *Pareiasaurus* amongst reptiles, *Helicoprion* amongst fishes, and *Dæmonhelix* amongst problematical fossils.

Although our knowledge of *Helicoprion* is comparatively recent, a very considerable literature has suddenly sprung into being concerning it and related forms, of which the older-known *Edestus* and *Campodus* are the most instructive and important. The latter, in fact, provides the only satisfactory clue we possess regarding the anatomical and systematic position of the whole series of *Edestus*-like forms.

Without entering into any general discussion, it may be said that the majority of writers concur in the opinion that the "spiral saw" of *Helicoprion* and the arched segments of *Edestus* represent stages of that peculiar modification amongst Paleozoic sharks whereby series of teeth become fused and inrolled without being shed. The most recent communication that has appeared on this subject strikes a slightly discordant note, in that the author, Mr. Edwin T. Newton,¹ suggests that *Helicoprion* and *Edestus* may not be of the same general nature after all. Although admitting that the former may be very plausibly regarded "as the enrolled dentition at or near the symphysis of an Elasmobranch, possibly allied to *Cestracionts*," his interpretation of *Edestus* is that it is a segmented dermal defence, such as a dorsal fin-spine.

¹ Newton, E. T. On the Occurrence of *Edestus* in the Coal-Measures of Britain. *Quart. Journ. Geol. Soc.*, vol. 60, 1904, pp. 1-8, pl. 1.

As has just been observed, a key to the understanding of Edestus-like forms is furnished by the symphysial dentition of Campodus, and there lies at hand a simple and reliable test for demonstrating their common plan of structure. For those who have not actual specimens at command, recourse must be had to plaster casts of Campodus and Edestus, which fortunately are not rare among the larger museums of this country. If one will place side by side the symphysial segments of *Campodus variabilis* and *Edestus heinrichi*, orienting them in natural position with the anterior end foremost, one will be struck by their almost perfect correspondence, part for part, and line for line.

First and most conspicuously, it will be noted that the coronal apices of Campodus and Edestus are similarly formed, their edges being denticulated and sides striated in corresponding manner. It will be seen further that the basal portion of the crown projects forward characteristically in both forms, and that the different segments overlap and are fused with one another in an identical fashion. Only in Edestus is the peculiar trough-like base much produced forwardly, and being composed of vasodentine, is usually well preserved, whereas in Campodus the basal support for the teeth is cartilaginous, and hence unsuited for preservation. But the structural resemblance of all parts is so obvious, especially when one occupies himself with original specimens, that the idea of a homology existing between them cannot be avoided. In fact, the evidence appears conclusive that Campodus, Edestus, and Helicoprion represent successive stages of modification amongst Cestraciont sharks. The importance of these forms from a morphological standpoint is such, and the discussion of them so widespread, that it seems desirable to draw up an index to their special literature, which is given below.

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